Common Core Standards - Resource Page

The resources below have been created to assist teachers' understanding and to aid instruction of this standard.

Domain	**Standard:** 3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
Operations and Algebraic Thinking **Multiply and divide within 100.**	Questions to Focus Learning How do multiplication and division relate to each other? How does understanding the inverse relationship between multiplication and division help you efficiently multiply and divide? What strategies do you know to help you efficiently multiply and divide? In order to multiply and divide fluently, students must have a variety of strategies. The understanding of properties of operations and flexibiltity involved in using a variety of strategies will help students as they learn more complex math concepts in later grades. Student Friendly Objectives *Knowledge Targets* I know multiplication and division facts from 0 through 10 (products up to 100). I know multiplication and division have an inverse relationship. I know multiplication strategies to fluently multiply and divide within 100. *Reasoning Targets* I can use the properties of multiplication as strategies to multiply and divide within 100. I can use the relationship between multiplication and division to multiply and divide within 100. I can choose an appropriate strategy to fluently multiply and divide within 100. I can compare two or more strategies used to solve multiplication and division problems.

Vocabulary

dividend
division
divisor
factors
inverse relationship
multiplication
product
quotient
unknown

Teacher Tips

Provided with permission from the Public Schools of North Carolina (May 2012)
http://www.dpi.state.nc.us/acre/standards/common-core-tools/#unmath

This standard uses the word fluently, which means accuracy, efficiency (using a reasonable amount of steps and time), and flexibility (using strategies such as the distributive property). "Know from memory" should not focus only on timed tests and repetitive practice, but ample experiences working with manipulatives, pictures, arrays, word problems, and numbers to internalize the basic facts (up to 9 x 9). By studying patterns and relationships in multiplication facts and relating multiplication and division, students build a foundation for fluency with multiplication and division facts. Students demonstrate fluency with multiplication facts through 10 and the related division facts. Multiplying and dividing fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently.

From the *Progressions for the Common Core State Standards in Mathematics- Operations and Algebraic Thinking*
Because an unknown factor (a division) can be found from the related multiplication, the emphasis at the end of the year is on knowing from memory all products of two one-digit numbers. This isn't a matter of instilling facts divorced from their meanings, but rather the outcome of a carefully designed learning process that heavily involves the interplay of practice and reasoning. All of the work on how different numbers fit with the base-ten numbers culminates in these "just know" products and is necessary for learning products. Fluent dividing for all single-digit numbers, which will combine "just knows", multiplication, patterns, and best strategy, is also part of this vital standard.
http://math.arizona.edu/~ime/progressions/

	Vertical Progression 4.OA.4 - Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite. 4.NBT.5 - Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. 4.NBT.6 - Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

The above information and more can be accessed for free on the Wiki-Teacher website.
Direct link for this standard: 3.OA.7